

### ABSTRACT

An interface device for providing a gateway function between lines of a public switched telephone network (PSTN) that carry digital hierarchy signals and an asynchronous transfer mode (ATM) backbone network that carries signals in ATM format, the interface device comprising: a telephony transceiver operative to receive upstream digital hierarchy signals in a plurality of digital hierarchies from the PSTN; a hierarchy converter associated with the telephony transceiver and operative to convert at least some of said upstream digital hierarchy signals in a plurality of digital hierarchies to upstream signals in a single digital hierarchy distributed over a plurality of logical channels; an inverse multiplexing unit operatively associated with the hierarchy converter and operative to inverse-multiplex the upstream signals in the single digital hierarchy distributed over a plurality of logical channels; an ATM framer operatively associated with the inverse multiplexing unit and operative to map at least some of the upstream inverse-multiplexed digital hierarchy signals into ATM cells; and an ATM transceiver operatively associated with the ATM framer and operative to transmit said upstream signals in ATM format to the ATM backbone network.